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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/597,665	09/15/2006	Massimo Paladini	06CIO011	4648
39232	7590	05/26/2009	EXAMINER	
Themis Law 7660 Fay Ave Ste H535 La Jolla, CA 92037			METZMAIER, DANIEL S	
			ART UNIT	PAPER NUMBER
			1796	
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			05/26/2009	PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/597,665	<b>Applicant(s)</b> PALADINI ET AL.	
	<b>Examiner</b> Daniel S. Metzmaier	<b>Art Unit</b> 1796	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 8/3, 9/15, & 10/15/2006.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 3-21 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 3-11 and 13-21 is/are rejected.
- 7) ☒ Claim(s) 12 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)            | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | Paper No(s)/Mail Date. _____                                      |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>8/3/2006</u> .  | 6) <input type="checkbox"/> Other: _____                          |

### DETAILED ACTION

Claims 3-21 are pending. Claims 1-2 have been cancelled.

#### *Priority*

1. Receipt is acknowledged of papers obtained for this national stage application from the International Bureau (PCT Rule 17.2(a)), submitted under 35 U.S.C. 119(a)-(d), which papers have been forwarded for entry into the record in the file.

#### *Oath/Declaration*

2. The application data sheet contains the pertinent information regarding the inventors' addresses and the foreign priority information. The oath or declaration is defective.

A new oath or declaration in compliance with 37 CFR 1.67(a) identifying this application by application number and filing date is required. See MPEP §§ 602.01 and 602.02.

The oath or declaration is defective because: the oath/declaration fails to identify the PCT, which the US filing under 35 U.S.C. 371 is based. Without reference to the PCT filing, the foreign priority document is more than one year prior to the US filing date. It is noted that the PCT filing date **has the effect** of the US filing date.

#### *Specification*

3. The abstract of the disclosure is objected to because the abstract should be in narrative form and generally limited to a single paragraph **on a separate sheet** within the range of 50 to 150 words.

Correction is required. See MPEP § 608.01(b).

***Claim Objections***

4. Claims 3-21 are objected to because of the following informalities: independent claims 3 and 20 are objected to because said claims employ both  $R_1$  and  $R^1$  in the same claim, which are very likely to be confused and/or mistakenly interchanged in amendments and/or printing. A similar situation exists in the same claims for  $R_2$  and  $R^2$ , and  $R_3$  and  $R^3$ . It is unclear why  $R_1$ ,  $R_2$  and  $R_3$  are required in place of the originally filed designation of said groups as R groups in the formulae.

The remaining claims do not correct said issue and therefore are included herein.

Appropriate correction is required.

***Claim Rejections - 35 USC § 112***

5. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

6. Claims 3-21 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Claim 4 is indefinite as to the metes and bounds of the claim because it is dependent on cancelled claim 1.

In claim 3, it is unclear what applicants intend by "A method for increasing dispersion in a liquid solution ◐ dispersion", (emphasis added).

Claim 3 and those dependent thereon are indefinite since the added quantity of the polyaminomethylenephosphonate of "higher than 0.1% ppm of total solution or dispersion weight". It is unclear what applicants' intent is since 0.1% ppm is an extremely unconventional means for representing concentration. Typical representation

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is ppm or % by weight. 0.1 % of 1 ppm reads on 1 ppt (parts per trillion). It is unclear where applicants have basis for said lower limit. To the extent applicants intend to claim said lower limit, applicants should provide basis in the original specification for said lower limit to be fully responsive.

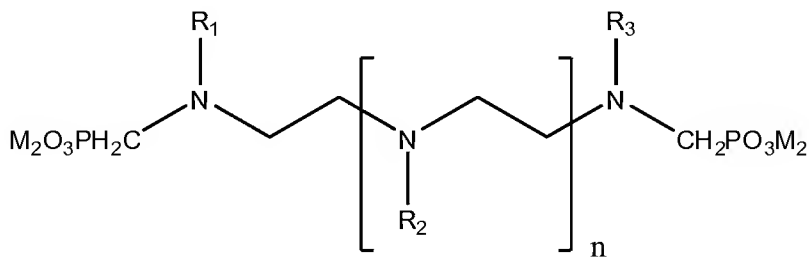
Claim 7 and 8 set forth ranges for n as “n is comprised between 2 and 50” or “n is comprised between 2 and 10”, (emphasis added). Since applicants define the range by open language, it is unclear that said range is limited to the range between the numeric values or any range that encompasses said range and therefore, is comprised of said range. It is suggested that applicants delete the term “comprised”.

In claim 12, “the ceramic” lacks proper antecedent basis.

### ***Claim Interpretation***

7. 3. (New) A method for **increasing dispersion in a liquid solution** o dispersion, the method comprising:

**adding a polyaminomethylenephosphonate composition to the liquid solution or dispersion**, the polyaminomethylenephosphonate composition having the formula



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wherein n is an integer higher than 2,

wherein M is a cation selected from the group consisting of the alkaline metal ions and the ammonium ion,

wherein R<sub>1</sub>, R<sub>2</sub>, and R<sub>3</sub> are each independently selected from the group consisting of,

-CH<sub>2</sub>PO<sub>3</sub>M<sub>2</sub>,

-CH<sub>2</sub>R<sup>1</sup>, wherein R<sup>1</sup> is selected from the group consisting of -CH<sub>2</sub>OH, -CHOHCH<sub>3</sub>, -CHOHCH<sub>2</sub>Cl, -CHOHCH<sub>2</sub>OH,

-(CH<sub>2</sub>)<sub>m</sub>SO<sub>3</sub>M, wherein m is 3 or 4,

-CH<sub>2</sub>CH<sub>2</sub>R<sup>2</sup>, wherein R<sup>2</sup> is selected from the group consisting of -CONH<sub>2</sub>, -CHO,

-COOR<sup>3</sup>, -COOX, -CN, wherein R<sup>3</sup> is -CH<sub>3</sub> or -C<sub>2</sub>H<sub>5</sub>, and wherein X is a cation selected from the group consisting of the alkaline metal ions and the ammonium ion, and

wherein the polyaminomethylenephosphonate composition is added in a quantity higher than 0.1% ppm of total solution or dispersion weight.

The methods include adding the compounds of the formulae defined in the claims to a liquid solution or dispersion to increase the dispersion therein at a concentration higher than 1 part per trillion.

### ***Claim Rejections - 35 USC § 102***

8. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

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(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

9. Claims 3-5, 13-15 and 20-21 are rejected under 35 U.S.C. 102(e) as being anticipated by Paladini et al, US 7,087,781. Paladini et al (abstract; examples and claims) discloses methods of treating aqueous systems for scale inhibition and corrosion inhibition with compounds that substantially overlap and read on the scope of the compounds of the instant claims. Paladini et al (column 3, lines 30-33) sets forth the cation defined in the claims for M as alkali metal or ammonium. Paladini et al clearly envisages cations as alkali metal ions or ammonium ions.

Paladini et al (column 5, lines 59 et seq) sets forth scale as "incrustation formed by CaCO<sub>3</sub>, CaSO<sub>4</sub>, BaSO<sub>4</sub> deposits and can be extended in a generalized manner to include all low-solubility salts of several cations (Mg, Fe, etc.)". See also claim 7, which makes specific mention of Fe ions. Paladini et al clearly envisages aqueous solutions or dispersions containing ions of said scale forming salts as inherently present.

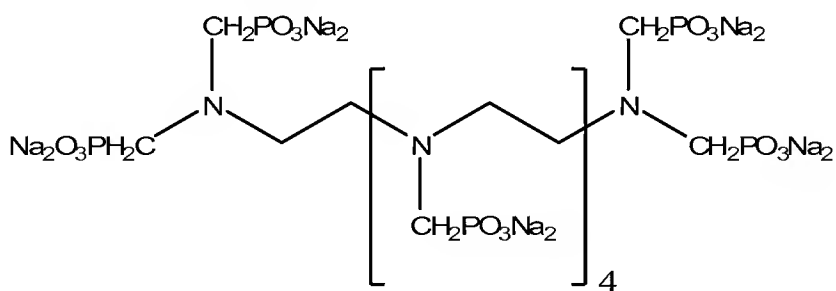
Paladini et al (column 5, lines 63 et seq) discloses the "term 'aqueous systems' refers to industrial and/or commercial systems. . . ; furthermore, processes of desalinization by reverse osmosis (RO) are included". Paladini et al clearly envisages aqueous solutions or dispersions suitable for the production of reverse osmosis products.

Increasing dispersion would have been inherent to inhibiting scale by (column 5, lines 51 et seq): "Inhibiting the precipitation and formation of deposits includes the

threshold effect, dispersion, solubilization or modification of the precipitate's morphology."

10. Claims 3-5, 13-15 and 20-21 are rejected under 35 U.S.C. 102(a) as being anticipated by GEOVANNI BOZZETTO SpA, WO 2004/011475. GEOVANNI BOZZETTO SpA is the corresponding PCT document to Paladini et al, US 7,087,781, and qualifies as prior art under 35 USC 102(a). The basis for the rejection as set forth in the anticipation rejection by Paladini et al, US 7,087,781, is herein incorporated by reference.

11. Claims 3-6, 15 and 17-21 are rejected under 35 U.S.C. 102(b) as being anticipated by Turner et al, US 4,945,030. See Turner et al (column 1 and example 1), wherein Briquest™ 8106/25S is disclosed as a water softening or sequestering agent in an aqueous developer composition with a sodium silicate and dyestuff as well as additional dispersing agents. Briquest™ 8106/25S is disclosed as a 25 % aqueous solution of sodium pentaethylene hexamine octakis (methylene phosphonate):



Triton™ H66, Syperonic™ T/304 and Triton™ CF-32 read on the claimed "other dispersing additives" (instant claim 6). Cibicron Golden Yellow 2R and Cibicron Red 6B read on a dyeing composition (Instant claims 17 and 20-21). The sodium meta silicate read on the inorganic binder including silicates (instant claims 18 and 19).



***Claim Rejections - 35 USC § 103***

12. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

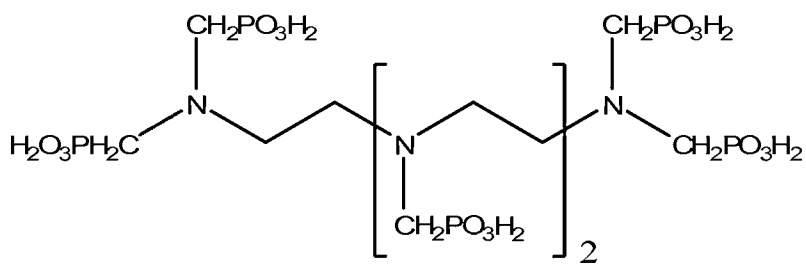
13. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

14. Claims 3-5, 13-16 and 20-21 are rejected under 35 U.S.C. 103(a) as being unpatentable over So-Safe Specialty Products PTY, Ltd, WO 96/02624 (hereafter So-Safe). So-Safe discloses cleaning compositions employing (pages 27-29, lines 30 et seq; particularly page 28, lines 1 and 9; and page 29, lines 3-7; and page 45, lines 19-25) as stabilizers in a concentration 0.03 – 15 % by weight, preferably 1 - 3 % by weight of stabilizers including Briquest™ 664-A, 785-A, or 8106-A, as well as the sodium, potassium and ammonium salts of these acids.

Merpol A is an alcohol phosphate wetting and dispersing agent and reads on “other dispersing additives”.

So-Safe differs from the claims in the sufficiency of the disclosed methods and an exemplified method as claimed.

So-Safe (page 45, lines 19-25) discloses employing Briquest™ 664-A, Triethylenetetramine-hexakis(methylenephosphonic) acid,  $C_{12}H_{36}N_4O_{18}P_6$ :



which is the acid form of a phosphonate compound having “n” = 2, similar to the compounds employed in the claimed methods. So-Safe (pages 27-29, lines 30 et seq; particularly page 28, lines 1 and 9; and page 29, lines 3-7; and page 45, lines 19-25) as stabilizers in a concentration 0.03 – 15 % by weight, preferably 1 - 3 % by weight of stabilizers including Briquest™ 664-A, 785-A, or 8106-A, as well as the sodium, potassium and ammonium salts of these acids.

It would have been obvious to one of ordinary skilled in the art at the time of applicants' invention to employ the sodium, potassium and ammonium salts of Briquest™ 664-A (Triethylenetetramine-hexakis(methylenephosphonic) acid), 785-A (tetraethylenepentaamine-heptakis(methylenephosphonic) acid), or 8106-A (pentaethylene hexamine octakis (methylene phosphonic) acid) amino-polyphosphonates as a functional equivalent to the acidic materials exemplified in the So-Safe reference for their advantageous stabilizing effect.

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15. Claims 3-6, 11, 13 and 20-21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Matsumoto et al, US 4,202,871. See example 7, wherein:

To 2 liters of an aqueous solution of ferric chloride was added a 10% aqueous solution of sodium hydroxide until the pH of the solution becomes 7.0 and the mixture was heated at 60.degree. C. The resulting precipitates were filtered off, washed with 2 liters of hot water and re-suspended in water to make the suspension to 1 liter. To the suspension were added 3.0 g of a ternary mixture of diethylenetriaminepenta (methylenephosphonic acid), triethylenetetraminehexa (methylenephosphonic acid) and **tetraethylenepentaminehepta (methylenephosphonic acid)**, having an acid number of 1205 mg KOH/g., and a 5% aqueous solution of sodium hydroxide to adjust the suspension at a pH of 11.0. The suspension was heated in a closed vessel at 160° C. for 90 minutes with stirring. The resulting red-orange precipitates were filtered off, washed with water and air-dried to obtain 63 g of the desired acicular ferric oxide particles. The average particle length and average diameter of the product were 0.4 microns and 0.08 microns, respectively.

Matsumoto et al differs from the claims in the addition of an acid rather than the claimed salt form in the “adding” step claimed.

Matsumoto et al (column 1, lines 66 et seq) teaches the addition of a growth regulator including as growth regulators (column 2, lines 52 et seq) organic phosphonic acid salt including salts of (column 3, lines 21-23) tetraethylenepentaminehepta (methylenephosphonic acid) or pentaethylenhexamineocta (methylenephosphonic acid). Matsumoto et al (column 2, lines 4-6) teaches the suspensions containing the growth regulating agents are pH adjusted to 8.0 to 12.5 with an alkali hydroxide.

The combination of the tetraethylenepentaminehepta (methylenephosphonic acid) and sodium hydroxide to a pH of 11.0 would have formed alkali salts of the compounds added in the instant claims. It would have been obvious to one of ordinary skilled in the art at the time of applicants' invention to employ alkali metal salts as

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clearly suggested and contemplated in the Matsumoto et al reference as an obvious functional equivalent to the organic phosphonic acids in an alkaline solution formed of alkali metal hydroxides.

16. Claims 3-10, 13, 15-16 and 19-21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Schapira et al, US 5,567,236, in view of Crump et al, US 4,468,252, and Levy et al, US 6,616,755. Schapira et al (abstract; columns 3 and 4, particularly column 3, lines 54 et seq; examples and claims) disclose cement compositions comprising the combination of a superplasticizing agents and stabilizing agents comprising methylenephosphonic acid derivatives of polyamines and alkali and ammonium salts thereof (polyaminomethylenephosphonate).

Schapira et al differs from the claims in the sufficiency of the disclosure of the particular methylenephosphonic acid derivatives of polyamines alkali or ammonium salts thereof (polyaminomethylenephosphonate). It is noted that Applicants (page 6, lines ~ 17-21) disclose the polyaminomethylenephosphonate as superplasticizing agents reading on claim 9.

Schapira et al (abstract and column 1, lines 5 et seq) teaches cement compositions comprising said additives as advantageous workable cement compositions having advantageous rheological properties.

Schapira et al (column 3, lines 54 et seq) broadly discloses methylenephosphonic acid derivatives of polyamines alkali or ammonium salts thereof (polyaminomethylenephosphonate) as dispersing compounds for said cement compositions at concentrations (column 7, lines 5 et seq) of 0.1 to 20 % by weight. The

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disclosed compounds read on the claims when "n" = 3-10, R is alkylene of 2 carbons and X is alkali metal or ammonium ions.

Schapira et al (column 2, lines 64 et seq) further teaches the combinations have a synergistic effect.

Crump et al (abstract; column 1, lines 5 et seq; and claims) further teach the methylenephosphonic acid derivatives of polyamines and salts thereof (polyaminomethylenephosphonate) are set retarding additives for cement.

These references are combinable because they teach cement compositions and additives therefore. It would have been obvious to one of ordinary skilled in the art at the time of applicants' invention to employ a known additive for their art recognized function. It would have been obvious to one of ordinary skilled in the art at the time of applicants' invention to employ the combination of a stabilizing polyaminomethylenephosphonate taught in the Schapira et al and the Crump et al references having "n" = 3-10, R is alkylene of 2 carbons and X is alkali metal or ammonium ions for their stabilizing and set retarding properties.

To the extent Schapira et al further differs from the claims 7 and 9-10 in the further addition of an additional and different superplasticizer or the particular superplasticizing additive of instant claim 10, Levy et al (abstract; and column 5, lines 1-6 and 54-56) disclose self-leveling cement compositions employing superplasticizing additive including at least one hydrosoluble or hydrodispersible superplasticizer (PCP), polycarboxylic acid type and comprising polyether chains. Clearly, it is conventional to employ mixtures of superplasticizing additives as shown in the Levy et al reference.

These references are combinable because they teach cement compositions and additives therefore. It would have been obvious to one of ordinary skilled in the art at the time of applicants' invention to employ a known additive for their art recognized function. It would have been obvious to one of ordinary skilled in the art at the time of applicants' invention to employ the combination of a the additive materials of Schapira et al with superplasticizer (PCP), polycarboxylic acid type and comprising polyether chains as a conventional and/or functional equivalent superplasticizing additive clearly contemplated in the Schapira et al reference.

### ***Double Patenting***

17. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

18. Claims 3-5, 13-15 and 20-21 are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 5-7 of U.S.

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Patent No. 7,087,781. Although the conflicting claims are not identical, they are not patentably distinct from each other because the methods overlap in scope and the method step is clearly encompassed by the instant claims. See the above rejection under 35 USC 102(e) regarding specific claim elements.

***Allowable Subject Matter***

19. Claim 12 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Daniel S. Metzmaier whose telephone number is (571) 272-1089. The examiner can normally be reached on 9:00 AM to 5:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David W. Wu can be reached on (571) 272-1114. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

**/Daniel S. Metzmaier/  
Primary Examiner, Art Unit 1796**

DSM